

RISK OF ADVERSE PREGNANCY OUTCOMES IN WOMEN TREATED FOR MALARIA WITH DIHYDROARTEMISININ-PIPERAQUINE OR QUININE IN THE FIRST TRIMESTER OF PREGNANCY IN INDONESIA: A RETROSPECTIVE DATA ANALYSIS

Rukhsana Ahmed¹, Kerryn A. Moore², Theda Lukito³, Andre-Marie Tchouatieu⁴, Maud M. Lugand⁴, Stephanie Dellicour¹, Feiko O. Ter Kuile¹, Richard N. Price⁵, Julie A. Simpson², Jeanne R. Poespoprodjo⁶

¹Liverpool School of Tropical Medicine, Liverpool, United Kingdom, ²Center for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Australia, ³Clinesia, Jakarta, Indonesia, ⁴Medicines for Malaria Venture, Geneva, Switzerland, ⁵Global and Tropical Health Division, Menzies School of Health Research and Charles Darwin University, Darwin, Australia, ⁶Timika Research Facility and Department of Child Health, Faculty of Medicine, Universitas Gadjah Mada, Yogyakarta, Indonesia

The use of artemisinin for the treatment of malaria in the 1st trimester of pregnancy is restricted due to limited safety data in early pregnancy in humans. Instead, quinine (QN) which is less effective and not well tolerated is recommended for treatment of 1st trimester malaria. In 2006 Indonesia became the first country to introduce artemisinin-based combination therapy (dihydroartemisinin-piperaquine, DP) for the treatment of malaria in the 2nd and 3rd trimesters. We reviewed a decade of retrospective hospital data from Mimika district, Papua province, Indonesia to assess the risk of stillbirth and miscarriage in women treated with either DP or QN in the 1st trimester. Medical records from the emergency room, inpatient, antenatal clinic and delivery unit were linked with laboratory and pharmacy data using hospital identification number, date of birth and name. The date of delivery, date that the drug was dispensed and the estimated gestational age at delivery were used to estimate the gestational age at the time of malaria treatment during pregnancy. The relative risks of stillbirth and miscarriage between the two treatments were analysed by Cox regression. Between 2006-2017, there were 3,766 malaria episodes treated with DP or QN: 869 in the 1st trimester (751 women) of which 203 (23.4%) were with DP (162 women) and 666 (76.6%) with QN (589 women). In the 1st trimester QN group, 10 (1.7%) pregnancies ended in miscarriage and 2 (0.3%) were stillbirths compared to 3 (1.9%) and 1 (0.6%) respectively in the DP group. The hazard ratio for pregnancy loss in the DP group compared with QN alone or QN plus clindamycin was 0.99 (CI 0.31-3.15). Further analysis is being explored on the effect of potential unmeasured confounders such as disease severity. Despite pregnancy loss being rare in our data, our study adds to the growing evidence that DP in the 1st trimester does not increase significantly the risk of pregnancy loss relative to QN.

WHAT HAPPENS WHEN THE SUPPORT ENDS? A COMPARISON OF PRIVATE SECTOR ANTIMALARIAL MARKET SITUATIONS IN MYANMAR

Si Thu Thein¹, Ye Kyaw Aung¹, Phone Si Hein¹, Aung Thi²

¹Population Services International Myanmar, Yangon, Myanmar, ²National Malaria Control Program, Ministry of Health and Sports, Nay Pyi Taw, Myanmar

Since 2012, Population Services International Myanmar (PSI) had run Artemisinin Monotherapy Replacement Project (AMTR) to promote quality-assured artemisinin-based combination therapy (QAACT), instead of oral artemisinin monotherapy (oral AMT), among private sector providers. PSI also promoted the use of rapid diagnostic tests (RDT) for malaria before providing any antimalarial treatment. Prompted by funding restraints in 2017, PSI had to drop several AMTR project areas. One year later in 2018, this study aimed to compare private sector antimalarial market situations between 'current' and 'stopped' AMTR areas. From each area, a representative sample of geographic clusters (wards and village tracts)

were selected for this cross-sectional quantitative survey of private sector outlets. A total of 143 clusters from current AMTR areas and 110 from stopped areas were included. In each cluster, all private sector outlets with the potential of stocking, selling and distributing antimalarial medicines were screened, and outlets those did any of these activities were interviewed. A total of 9,933 private sector outlets (4,039 from current areas and 5,894 from stopped ones) were screened and 343 were eligible for interviews (164 current, 179 stopped). Availability of QAACT and RDT were higher in current areas compared to stopped ones (52.1% vs 36.3% and 28.7% vs. 7.0% respectively). Availability of oral AMT was lower in current areas than stopped ones (4.8% vs 11.6%), and its market share was 0.4% of the total in current areas but 6.5% in stopped ones. From outlet providers perspective, 43.7% of them in current areas mentioned QAACT as the most effective antimalarial medicine whereas 36.6% from stopped areas said so. Also, 27.4% of providers in current areas said they had reported malaria case data but 22.5% in stopped areas said so. Thus, stopping AMTR program had possible untoward effects on private sector antimalarial markets. Availability of QAACT and RDT were lower but that of oral AMT was higher in stopped AMTR areas compared to current ones. The knowledge of providers had also declined over a year but not as marked as stock situations.

JOINT EFFORTS TO IMPROVE MALARIA CONTROL IN THREE REFUGEE CAMPS IN KIGOMA, TANZANIA: SUCCESSES, CHALLENGES AND LESSONS LEARNED

Shabani Kililwa Muller¹, Juma Ng'akola¹, Zephania Nyakiha², Godfrey Smart³, Goodluck Tesha¹, Jasmine Chadewa², Agnes Kosia², Zahra Mkomwa¹, Dunstan Bishanga⁴, Rita Noronha², Lusekelo Njoge⁴, Gaudiosa Tibajiuka⁴, Chonge Kitojo⁵, Erik Reaves⁵

¹Path Tanzania, Kigoma, United Republic of Tanzania, ²USAID Boresha Afya Project -Jhiego Tanzania, Kigoma, United Republic of Tanzania, ³Regional Health Management Team-Kigoma, Tanzania, Kigoma, United Republic of Tanzania, ⁴USAID Boresha Afya Project -Jhpiego Tanzania, Kigoma, United Republic of Tanzania, ⁵President's Malaria Initiative/United States Agency for International Development, Kigoma, United Republic of Tanzania

The majority of refugees from Democratic Republic of Congo (DRC) and Burundi arriving in Tanzania are hosted in Kigoma region, where 59.2% of all Tanzanian malaria cases are reported every year. This high proportion of malaria cases is thought to be mostly due to high prevalence rates in three refugee camps, namely Nyarugusu, Mtendeli and Nduta. This article highlights important interventions led by USAID Boresha Afya Program in collaboration with the National Malaria Control Program (NMCP) in the three refugee camps in Kigoma. USAID Boresha Afya provided mentorship and integrated supportive supervisions in the refugee camps in Kigoma region in 2017 and 2018 by following national guidelines. We also conducted meetings with the Regional and District health management teams to identify and address challenges observed during supportive supervisions. Then, we examined malaria indicators in the District Health Information System (DHIS2) and compared descriptive data before and after the interventions. Following mentorship and supportive supervisions, clinical malaria cases in all refugee camps reduced from 4% in 2016 to 0.1% in December 2018. Malaria reporting rate is now 100% as compared to 41.7% in 2016. Malaria positivity rate has decreased from 59.8% to 54.4% in December 2018. In addition, the proportion of women receiving at least two doses of sulphadoxine-pyrimethamine at antenatal care visits increased from 66.3% in 2016 to 80.8% in December 2018. However, the burden of malaria in refugee camps remains high (54%) as compared to other places. Inaccuracy of data records and management, shortage of staff, and low coverage of long lasting insecticide-treated mosquito nets (63%) are among the major challenges. In addition, non-adherence to a number of recommended government policies and cultural differences hinder the NMCP's efforts to control malaria in refugee camps. Despite these challenges, the malaria burden can be reduced in the refugee camps if multiple interventions are implemented correctly through coordinated stakeholders' efforts.